

THIRD-PARTY MAINTENANCE  
IN EUROPE, 1985-1991

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**Customer Service Programme - Europe (CSP-E)**

***Third-Party Maintenance in Europe, 1985-1991***

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**THIRD-PARTY MAINTENANCE  
IN EUROPE, 1985-1991**

**ABSTRACT**

This report contains the results of research conducted by INPUT during 1986 into the third-party maintenance market in Western Europe, produced as part of INPUT's Customer Service Programme - Europe (CSPE).

The report examines both user and vendor perceptions of TPM and forecasts the growth of the market in the U.K., France, West Germany, Italy, the Netherlands, and Sweden for the period 1985 to 1991.

Manufacturer entry in TPM is also examined and market strategies are discussed.

Profiles of the top 15 U.K. TPM companies together with names and addresses of European TPMs are given.

This report contains 118 pages, including 45 exhibits.



## THIRD-PARTY MAINTENANCE IN EUROPE, 1985-1991

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## I INTRODUCTION





## I INTRODUCTION

### A. OBJECTIVE AND SCOPE OF THE REPORT

- This report examines the forces currently shaping the European markets for third-party maintenance and forecasts growth to 1991.
- The country markets covered are the U.K., France, Germany, Italy, the Netherlands, and Sweden.
- The market has traditionally been defined as a maintenance service provided to users by a company which is neither the manufacturer nor the user of the data processing installation.
- However, manufacturers have begun to enter the TPM market, eroding the independent TPMs' unique selling propositions of single-source maintenance and maintenance of any hardware item irrespective of vendor.
- Independent TPMs will have to shift the emphasis of their marketing strategy to take the manufacturers' TPM strategy into account and to take full advantage of new opportunities as they occur.



## B. METHODOLOGY

- The research for this study was conducted between March and July 1986 as part of INPUT's 1986 Customer Service Programme - Europe.
- Vendor data was obtained by telephone and face-to-face contact with 45 European suppliers of TPM services.
- User data was obtained as part of the research for the 1986 annual report on the customer services market and is based on the responses of 814 European DP managers.

## C. REPORT STRUCTURE

- The chapters of this report are organised as follows:
  - Chapter II contains the Executive Overview providing a concise summary of the whole report.
  - Chapter III provides a forecast for the individual country markets for the period 1985 to 1991.
  - Chapter IV examines users' views of TPM maintenance.
  - Chapter V analyses the independent TPMs' perspectives and views of the markets.
  - Chapter VI presents an analysis of manufacturer activity in the TPM market.



- Appendix A gives profiles of the top 15 U.K. independent TPMs.
- Appendix B gives the names and addresses of European companies currently offering independent TPM services.









## II EXECUTIVE OVERVIEW

## THEORY OF THE HELL

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## II EXECUTIVE OVERVIEW

- This Executive Overview is designed in a presentation format in order to:
  - Help the busy reader quickly review key research findings.
  - Provide a ready-to-go executive presentation, complete with script, to facilitate group communication.
- The key points of the entire report are summarised in Exhibits II-1 through II-7. On the left-hand page facing each exhibit is a script explaining its contents.



A. EUROPEAN TPM MARKET \$1 BILLION BY 1991

- INPUT estimates that the TPM revenues of the U.K., France, West Germany, Italy, the Netherlands, and Sweden totalled \$265 million in 1985.
- INPUT also estimates that the market will grow at an average annual rate of 25% to reach in excess of \$1 billion by 1991.
- In 1985 the largest single market was the U.K., representing 56% of the total, but this will have decreased slightly to 44% by 1991.
- The fastest growing market during the forecast period is the French market; its share of the total increasing from 20% in 1985 to 27% in 1991.





**EUROPEAN TPM MARKET \$1 BILLION  
BY 1991**

- 1985 TPM Market: \$265 Million
  - AAGR 1985 to 1991: 25%
  - Largest Market - U K: \$150 Million
  - Fastest Growth - France: 27% AAGR
-



## B. COUNTRY MARKET GROWTH PATTERNS

- In the mature markets of the U.K., the Netherlands, and Sweden, TPM usage is typified by average intensity of TPM use in spite of high penetration into the user base. Although users accept TPM as an alternative to vendor maintenance, growth must be generated within the existing client base as well as by expansion of this base.
- In the younger markets of Germany and Italy, the TPM concept has yet to be sold to the majority of users. Since user resistance is relatively high, these markets will be slow to develop relative to their total market potential.
- Conditions in France are favourable for fast TPM growth—high intensity of TPM use amongst existing users, the emergence of TPM service at a national level, and a high level of interest amongst non-TPM users.



## **COUNTRY MARKET GROWTH PATTERNS**

- **Mature Market: Consolidation**
  - **Young Market: Promotion**
-



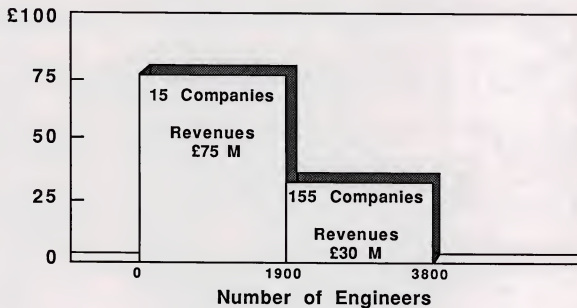
### C. UNITED KINGDOM TPM MARKET CHARACTERISTICS

- INPUT estimates that 50% of the engineers in the U.K. TPM market are employed by the top 15 companies which generate 75 million pounds of the total U.K. TPM revenues of 105 million pounds.
- The remaining 155 companies together generate only 30 million pounds of revenues, primarily from PCs and peripherals, and will be under increasing pressures during the forecast period with regard to pricing, vendor competition, and user expectations.





### UNITED KINGDOM TPM MARKET CHARACTERISTICS





#### D. USER PERSPECTIVES

- In Europe, about 3% of all service revenues are earned by independent TPMs who provide services to 21% of users. Even allowing for the fact that independent TPMs offer lower prices than manufacturers, it is clear that the majority of users do not have a single-source maintenance contract.
- Independent and vendor maintenance services are being contracted in a complementary fashion.
  - Users' CPUs are maintained by the manufacturer at relatively high cost.
  - Users contract independent TPMs to maintain other equipment at the lowest possible cost.
- Cost was cited as the reason for using independent TPMs by 58% of users, but the convenience and efficiency of such a service are also important to users.
- Although high expectations of cost benefits can lead to disappointment, price satisfaction with maintenance service is slightly higher amongst independent TPM users than users who do not employ independent TPM services.



## USER PERSPECTIVES

- **Single-Source Maintenance Potential**
  - **Independent/Vendor Maintenance Complementary**
  - **Higher Satisfaction from TPM**
-



## E. TPM VENDOR PERSPECTIVES

- TPM vendors see more factors promoting TPM growth than hindering it. They are, nevertheless, aware of their dependence upon manufacturers for spare parts and technical information.
- European TPMs in particular see their best strategy as complementing manufacturers' maintenance activities rather than direct competition. Agreements with manufacturers will help to improve this aspect of service.
- TPMs also recognise the importance of providing the service users want and are trying to accommodate both their price and their level of service expectations.
- TPM vendors report that entry into the market is attractive but is also becoming increasingly difficult because of the levels of investment required in spare parts. Entry costs can be reduced and long-term survival chances improved if new entrants specialise in niche markets and operate on a local or regional level.
- Customers are seeking a total service solution which includes software maintenance. This is already the case in Sweden and will become increasingly important in the developed markets of the U.K. and the Netherlands.
- TPM vendors presently believe their main source of competition is other TPMs but also believe that manufacturers undertaking mixed installation maintenance will be the major source of competition in the medium term.

1. The first part of the paper discusses the importance of maintaining accurate records of all transactions. It emphasizes that proper record-keeping is essential for the success of any business and for the protection of the interests of all parties involved. The author argues that without accurate records, it is impossible to make informed decisions or to identify areas for improvement.

2. The second part of the paper focuses on the importance of maintaining accurate records of all transactions. It emphasizes that proper record-keeping is essential for the success of any business and for the protection of the interests of all parties involved. The author argues that without accurate records, it is impossible to make informed decisions or to identify areas for improvement.

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5. The fifth part of the paper discusses the importance of maintaining accurate records of all transactions. It emphasizes that proper record-keeping is essential for the success of any business and for the protection of the interests of all parties involved. The author argues that without accurate records, it is impossible to make informed decisions or to identify areas for improvement.



## **TPM VENDOR PERSPECTIVES**

- **Growth in Spite of Manufacturers**
  - **TPMs Led by Users' Expectations**
  - **Market Entry Difficulties**
  - **Total Service Solution Important**
  - **Vendors Threaten TPM Markets**
-



## F. MANUFACTURERS ENTER THE TPM MARKET

- Hardware manufacturers who until now have maintained only their own equipment are beginning to enter the mixed installation market to boost their hardware maintenance revenues. This occurs in two phases:
  - Maintenance of all equipment where CPUs are produced by manufacturers.
  - Open competition for all maintenance contracts for all sites.
- Although these manufacturers will maintain almost all brands of peripherals and PC clones, they will be unlikely to compete for maintenance of each other's CPUs. This would only be possible if it were a mutual arrangement which would open up a manufacturer's own installed client base to competitors.
- TPMs visit clients to maintain equipment, but for manufacturers maintenance provides an opportunity to accomplish several aims at once. Although earning revenue is important in the short term, the long-term benefits include improving the corporate image and obtaining market feedback on clients' hardware needs for future products.



## **MANUFACTURERS - THE NEW TPMS**

- **Manufacturers Entering the Mixed Installation Maintenance Market**
  - **Manufacturers Unlikely to Maintain CPUs Made by Others**
  - **Mixed Installation Maintenance Offers Special Benefits to Manufacturers Which Are Not Available to TPMS**
-



## G. TPM STRATEGY RECOMMENDATIONS

- INPUT recommends that TPMs shift the emphasis of their marketing in response to the entry of manufacturers into the mixed installation market. Since manufacturers are unlikely to maintain each other's CPUs, this service can be profitably offered by TPMs to clients with CPUs from more than one manufacturer.
- Impartiality, the separation of TPM from sales of hardware can also be emphasised profitably at a time when manufacturers will tend to use maintenance engineers to create upgrade and add-on hardware sales leads.
- INPUT recommends that TPMs reach agreements with manufacturers to maintain their equipment in regions and niches which are uneconomic for the manufacturer's own maintenance service. Such agreements will also go a long way to ensuring the availability of parts and technical data.





## **TPM STRATEGY RECOMMENDATIONS**

- **TPMs Change Marketing Approach**
    - **Multi-Vendor CPU Maintenance**
    - **Emphasize Independence**
  - **TPM - Vendor Agreements**
-







### III MARKET ANALYSIS AND FORECASTS

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### III MARKET ANALYSIS AND FORECASTS

#### A. INTRODUCTION

- The European markets were researched during 1986 and the markets forecast for the period 1986 to 1991.
- In order to maintain comparability between the different countries throughout the five-year forecast period, the U.S. dollar conversion rates have been adjusted to reflect assumed differences in inflation rates.
- U.S. inflation was estimated at 3.5% per year.
- These conversion rates should not be taken to represent a forecast of exchange rates. They are calculated on the basis of prevailing exchange rates and used simply as an index to eradicate distortions which would otherwise arise as a result of using different inflation assumptions for each country.
- U.S. dollar conversion rate assumptions are shown in Exhibit III-1.



EXHIBIT III-1

U.S. DOLLAR CONVERSION RATE ASSUMPTIONS

CURRENCY	1985	1986	1987	1988	1989	1990	1991
Pounds Sterling	0.70	0.65	0.66	0.67	0.68	0.69	0.70
French Francs	8.00	6.99	7.02	7.06	7.09	7.12	7.16
Deutsche Marks	2.62	2.18	2.14	2.09	2.05	2.01	1.97
Italian Lira	1,770	1,492	1,529	1,567	1,607	1,647	1,688
Dutch Florins	3.41	2.52	2.46	2.40	2.34	2.28	2.22
Swedish Krona	8.79	7.22	7.22	7.29	7.33	7.37	7.40
U.S.A.	1.00	1.00	1.00	1.00	1.00	1.00	1.00



## B. EUROPEAN TPM MARKET FORECAST

- INPUT estimated that the revenues of the TPM markets in the U.K., France, West Germany, Italy, the Netherlands, and Sweden totalled \$265 million in 1985.
- For the period 1986 to 1991, INPUT forecasts that the market will grow at an average annual growth rate of 25%.
- During the forecast period the largest single country market will be the U.K., its share of the total decreasing slightly from 56% in 1985 to 44% in 1992, as shown in Exhibit III-2.
- The fastest growing market will be France, increasing in value from \$53 million in 1985 to \$270 million in 1991, representing a growth in market share from 20% to 27% of the total.
- Exhibit III-3 shows the breakdown of the individual country markets and their growth patterns from 1986 to 1991.
- Exhibit III-4 lists the leading European TPM companies with their revenues and market shares.

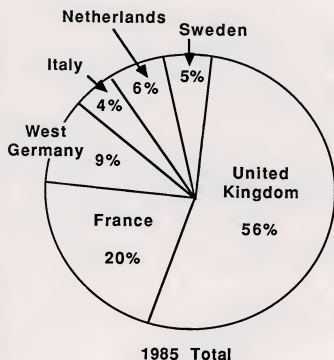
## C. THE U.K. TPM MARKET

- INPUT estimated that U.K. TPM revenues totalled 105 million pounds in 1985 and will grow at an average annual rate of 20% to reach 310 million pounds in 1991, as shown in Exhibit III-5.



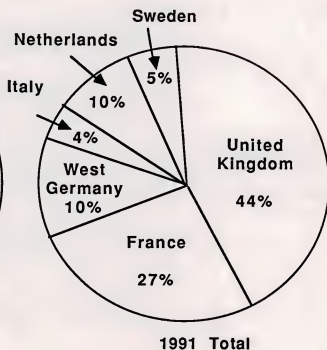
EXHIBIT III-2

EUROPEAN TPM MARKET GROWTH  
1985-1991



\$265 Million

AAGR = +25%



\$1,000 Million





EXHIBIT III-3

EUROPEAN TPM GROWTH: COUNTRY MARKETS, 1985-1991  
U.S. \$ MILLIONS

CURRENCY	1985	1986	1987	1988	1989	1990	1991
United Kingdom	\$150	\$200	\$240	\$290	\$340	\$390	\$445
France	53	75	95	125	160	210	270
West Germany	23	35	40	50	70	80	95
Italy	10	14	16	20	25	30	40
Netherlands	15	26	35	45	60	80	105
Sweden	14	20	24	30	35	40	45
Total	\$265	\$370	\$450	\$560	\$690	\$830	\$1,000

N.B. Figures have been rounded



EXHIBIT III-4

LEADING EUROPEAN TPM COMPANIES

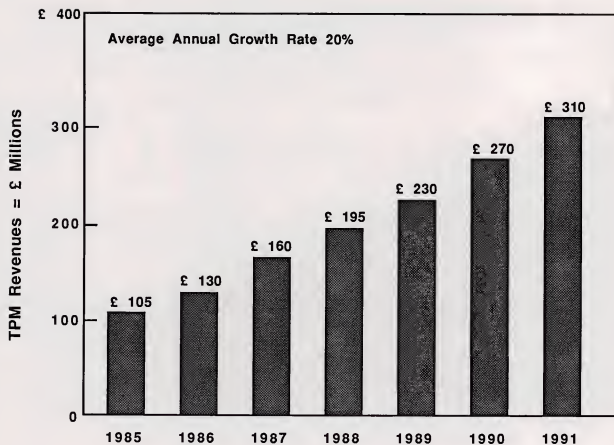
RANK	COMPANY	REVENUE (\$ Millions)	MARKET SHARE
1	DPCE	36	13%
2=	Bell Technical Services	20	7%
2=	Computer Field Maintenance	20	7%
4	XTEC Vollwood	15	6%
5	Telub	13	5%
6	SMS International*	10	4%

\* Granada Group PLC, owner of Computer Field Maintenance, purchased SMS International in September 1986.



EXHIBIT III-5

UNITED KINGDOM TPM MARKET GROWTH, 1985-1991





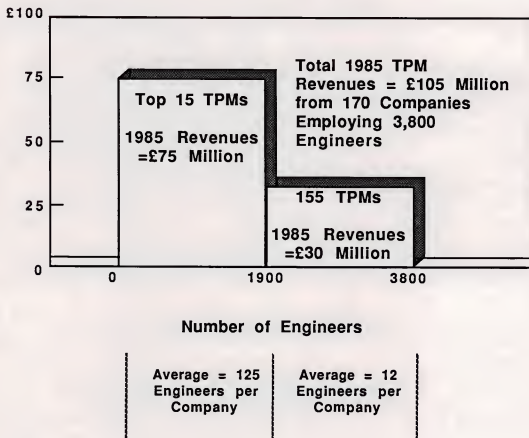
- The revenues in 1985 were achieved by approximately 170 companies employing some 3,800 engineers with the average TPM company employing 22 engineers, each generating some 27,600 pounds in revenues.
- In practice, the structure of the U.K. TPM market is skewed; the top 15 companies employ half the engineers and take just over 70% of the total revenues, as shown in Exhibit III-6.
- The number of engineers employed in the top 15 companies ranges from 34 to 335, and the average revenue per engineer ranges from 27,000 pounds to 94,000 pounds per year.
- The proportion of administrative and sales staff supporting the engineering workforce varies from one company to another, but for the top 15 companies the range is between 20% and 40% of total employees.
- The effect of this on revenues per employee is to give a range of 20,000 pounds to 56,000 pounds per employee in 1985.
- The corollary is that the remaining 155 companies employ 1,900 engineers yet only generated TPM revenues of 30 million pounds in 1985. The average firm has 12 engineers, each generating 16,000 pounds in revenues per year.
- User research indicates that some 38% of users currently have contracts with TPMs. However, the fact that TPM only represents 8% of total maintenance revenues indicates that TPM usage is thinly spread and that the TPM supply of single-source maintenance of peripherals is used to offset the costs of CPU maintenance by vendors.
- At present, less than 5% of TPM companies offer mainframe maintenance, while less than half offer minicomputer maintenance. The maintenance of business PCs and peripherals remain the major areas of U.K. TPM activity.





EXHIBIT III-6

UNITED KINGDOM TPM MARKET CHARACTERISTICS





- It is these areas--business PCs and associated peripherals--which will be under increasing pressure during the forecast period, from:
  - Increased reliability of equipment.
  - Increased sophistication of users.
  - The entry of manufacturers into the TPM markets.
  - Consequent downward pressure on maintenance prices.
- Since TPM penetration into the U.K. user base is already high at 38%, it is possible that attempts to expand TPM revenues solely by increasing the client base will encounter growing user resistance. TPM revenue growth must, therefore, also come from growth in revenues earned from each client.
- It is also likely to lead to more emphasis being placed on competitive pricing offered to firms already using TPM rather than an expansion of sales effort in converting the non-TPM user to TPM.
- In the short term, TPMs intending to survive increasing competition in the business PC and peripherals market will move into minicomputer maintenance, such as network and departmental systems markets, or into specialised markets such as CAD/CAM, telecommunications, retail banking teller machines, or point-of-sale equipment.
- In the longer term, TPMs will expand their service offering to provide a single-source solution including software support.
- The 15 largest independent U.K. TPMs are shown, ranked by revenue, in Exhibit III-7. Profiles of these companies are given in Appendix A.



**EXHIBIT III-7**

**THE TOP 15 UNITED KINGDOM INDEPENDENT TPMS  
1985**

<b>1</b>	<b>Computer Field Maintenance</b>	<b>£11.8</b>
<b>2</b>	<b>Bell Technical Services</b>	<b>11.6</b>
<b>3</b>	<b>DPCE</b>	<b>9.9</b>
<b>4</b>	<b>Mainstay Computer Cover</b>	<b>5.8</b>
<b>5</b>	<b>MBS Rentals</b>	<b>5.6</b>
<b>6</b>	<b>DDT</b>	<b>4.6</b>
<b>7</b>	<b>Kode Services</b>	<b>4.5</b>
<b>8</b>	<b>SMS International</b>	<b>4.4</b>
<b>9</b>	<b>Systems Reliability</b>	<b>3.5</b>
<b>10=</b>	<b>Mills Associates</b>	<b>3.2</b>
<b>10=</b>	<b>Computeraid Services</b>	<b>3.2</b>
<b>12</b>	<b>Quest International</b>	<b>3.0</b>
<b>13</b>	<b>Sun Computer Maintenance</b>	<b>2.4</b>
<b>14</b>	<b>Jaecrow Systems Services</b>	<b>2.3</b>
<b>15</b>	<b>Advanced Technology Maintenance</b>	<b>1.7</b>

N.B.: Ranked by 1985 United Kingdom TPM Revenues



- U.K. firms currently active in TPM are listed alphabetically in Appendix B with address and telephone number.

#### D. THE FRENCH TPM MARKET

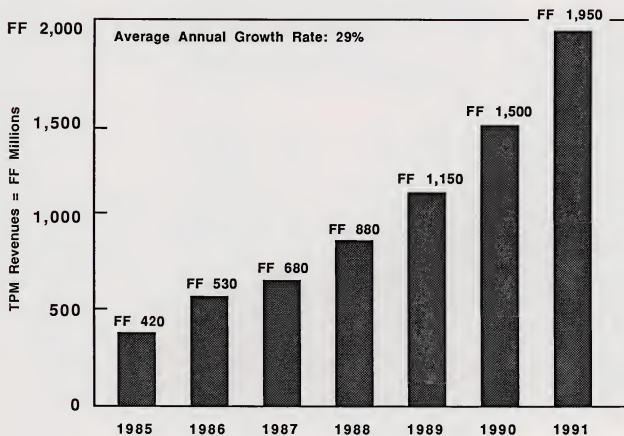
- INPUT estimated that TPM revenues in France totalled 420FF million in 1985 and will grow at an average annual rate of 30% to reach 1,950FF million in 1991, as shown in Exhibit III-8.
- The following conditions prevailing in the French market are conducive to strong growth during the forecast period:
  - High intensity of TPM usage.
  - TPMs used primarily to maintain CPUs.
  - Non-users are considering TPMs.
- The TPM penetration of the French user base was 9% in 1985, and TPM represented around 3% of total maintenance revenues.
- In France, 87% of TPM users contracted with TPM companies to maintain computer systems, whilst all other countries analysed used TPMs primarily to maintain peripherals and terminals. This high level of user confidence in TPMs' abilities, together with vendors' views of continued entries of new firms to the market, will also contribute to a high growth rate.
- Eleven percent of respondents indicated that they were currently considering using TPMs to maintain their equipment, which compares favourably with a European average of 3% of non-TPM users considering TPM.





EXHIBIT III-8

FRENCH TPM MARKET GROWTH, 1985-1991





- Aware of their dependence upon manufacturers for spare parts and technical information, French TPMs prefer to complement rather than compete with manufacturers' maintenance services. The benefits of this approach are:
  - Good relations with manufacturers.
  - Greater credibility with existing and new clients.
- INPUT forecasts that TPM penetration of the user base will grow from 9% to 19%, which is unlikely to encounter serious user resistance, and the penetration of TPM revenues will grow from just over 3% to nearly 7% of total maintenance revenues.
- Companies active in the French TPM market are listed below:
  - Anderson Jacobson.
  - CGEE Alsthom.
  - Control Data.
  - DDC France.
  - Decision Data France.
  - Depannage Technique Informatique.
  - DMA: Depannage Micro Informatique Appliquee.
  - DPCE.
  - DMS: Data Magnetique Systemes.



- ECM Informatique.
- Eurotechnica.
- Informat Grand Sud-Ouest.
- Informat.
- Interdata.
- Intersystem.
- Logabax.
- Maintenance Informatique Service.
- Maintronic.
- Microlog.
- Microma.
- Organisation Technique pour l'Informatique Franco-Europeenne.
- Sanson Data.
- Sefem Informatique.
- Sefti Memoria.
- Semir.
- Semsi Informatique.



- Service Informatique Assistance Maintenance.
- SMS International.
- SG2.
- Sodeteg TAI.
- Spectral.
- Technic Britech Informatique.
- Telci.
- Telesystemes.

#### E. THE GERMAN TPM MARKET

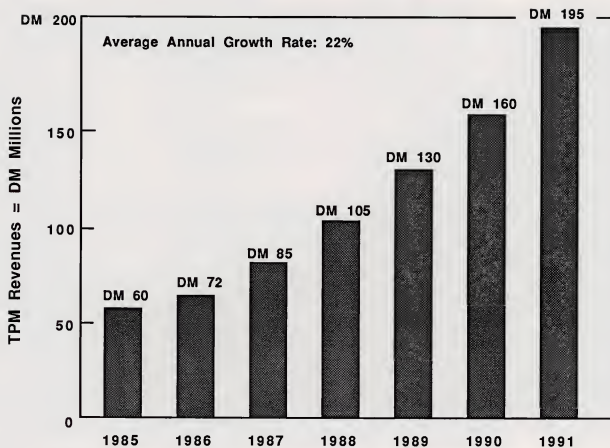
- TPM revenues earned in the German market in 1985 totalled DM60 million and are forecast to grow at an average annual rate of nearly 22% to reach DM195 million in 1991, as shown in Exhibit III-9.
- In spite of the fact that satisfaction with manufacturers' maintenance appears to be at its lowest in Germany, users are reluctant to experiment with TPMs, particularly where large computer systems are concerned.
- In contrast, however, INPUT noted that 20% of German users reported that they were unaware of TPM as an alternative to manufacturers' maintenance or had not been approached by TPMs.





EXHIBIT III-9

GERMAN TPM MARKET GROWTH, 1985-1991





- Penetration of the user base at 8% is comparable with France, but the TPM penetration of the total maintenance revenue is only just over 1%.
- INPUT places strong emphasis on aggressive and persuasive marketing to increase user awareness of TPM.
- Companies active in the German market include:
  - Bitronic Hardware Service.
  - Control Data.
  - Dataway.
  - Extec Computer Systems.
  - Interscan.
  - ISS - Ingenieurburo fur Systems Integration und Sendertechnik.
  - Mannesmann-Kienzle.
  - Periphere Computer Systeme.
  - SMS International.
  - Vollwood Computer Service GmbH.



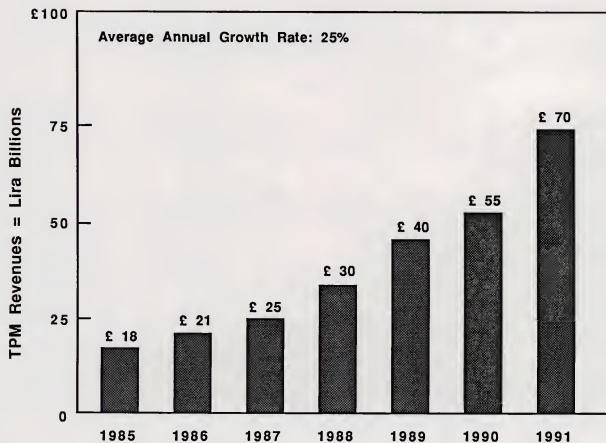
## F. THE ITALIAN TPM MARKET

- TPM revenues in Italy totalled L18 billion in 1985, representing just over 1% penetration of total maintenance revenues.
- Since the penetration of the user base was 18% in 1985, the current intensity of TPM usage is very low, yet represents a broader base for expansion than that noted in Germany.
- The Italian market is still at an early stage of development; TPM companies work on a local or regional basis with no companies currently offering a nationwide service.
- TPMs in the Italian market must work hard to overcome the user perception that TPM service is not as good as that provided by manufacturers and must continue to market aggressively; 9% of non-TPM users reported that they were unaware of TPM as an alternative to manufacturer maintenance or had not been approached by a TPM.
- INPUT, therefore, forecasts that this market will grow by an average of 25% per year during the forecast period to reach L70 billion in 1991, as shown in Exhibit III-10.
- Companies currently active in the Italian TPM market include:
  - Computer Leasing International.
  - Encodex Hardware Service.
  - Eurotech Italia Spa.
  - IBI Maint.



EXHIBIT III-10

ITALIAN TPM MARKET GROWTH, 1985-1991







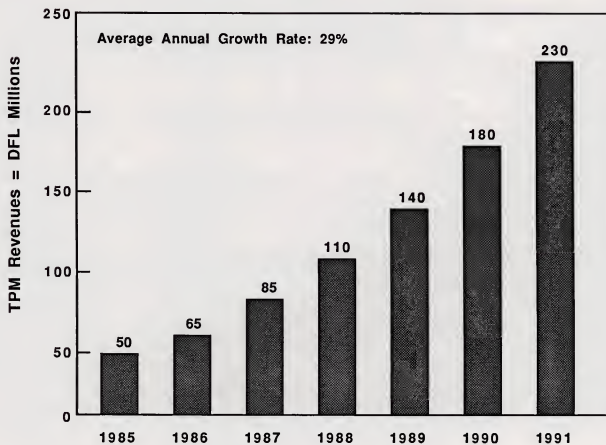
## G. THE NETHERLANDS TPM MARKET

- INPUT forecasts that the Netherlands' TPM revenues will grow at an average annual growth rate of 29% from 50 DFL million in 1985 to 230 DFL million in 1991, as shown in Exhibit III-11.
- TPM penetration of total service revenues was under 4% in 1985 and the penetration of the user base was 24%, indicating a pattern of TPM usage similar to the U.K.:
  - Single-source maintenance by TPMs is the exception rather than the rule.
  - Users contract TPMs mainly for peripherals in order to offset the costs of vendor maintenance of CPUs.
- The largest company in the Netherlands market--GEVEKE--currently has a 25% market share, and the actual performance of all Dutch TPMs against the forecast will be affected by the performance of this one company. Whilst a growth rate of 30% or 40% in any given year is not uncommon in TPM, sustaining such a rate over a period of five or six years is very much more difficult.
- User acceptance of TPM is already high, and aggressive marketing will be needed to expand the TPM user base and to increase the revenues earned from each client.
- Companies active in the Dutch TPM market are:
  - Brink BV.
  - DPCE (Netherlands) BV.



EXHIBIT III-11

NETHERLANDS TPM MARKET GROWTH, 1985-1991





- DTC Service.
- ESCON - Electronic Service Contractors.
- GEVEKE Electronics Service.
- Thijssen Field Service.

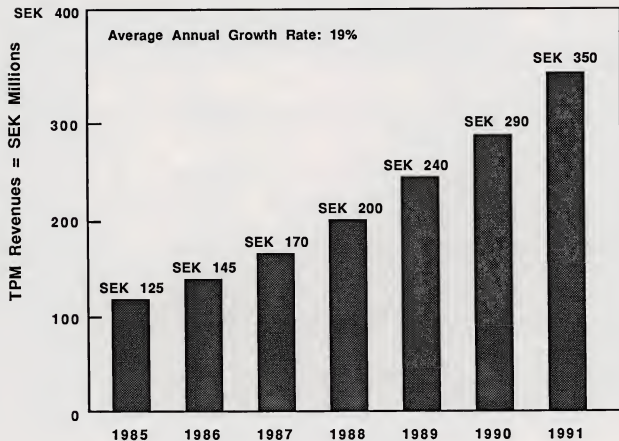
#### HL THE SWEDISH TPM MARKET

- INPUT forecasts that the Swedish TPM market will grow at an average annual rate of 19% from 125 SEK million in 1985 to 350 SEK million in 1991, as shown in Exhibit III-12.
- With the exception of Telub and Ericsson Radio Systems, who provide national coverage, the Swedish TPMs operate on a local or regional basis.
- TPM revenues represent less than 4% of the total Swedish service revenues and were derived from 36% of the users. Growth of TPM revenues must, therefore, come from increased service penetration into each client site as well as expansion of the TPM user base.
- The sophistication of the users and high investment levels required to set up new TPMs indicate that growth in this market will mainly come from existing TPMs with relatively few new entrants over the forecast period.
- TPMs currently active in Sweden are:
  - Databolim.
  - Emma Data System.



EXHIBIT III-12

SWEDISH TPM MARKET GROWTH, 1985-1991







- Ericsson Radio Systems.
- Owell AB.
- Telub AB.







#### IV USER PERSPECTIVES

THE UNIVERSITY OF CHICAGO







#### **IV USER PERSPECTIVES**

- Chapter IV analyses the responses of DP managers to the following maintenance issues:
  - The proportion of user sites using TPM.
  - Equipment maintained by TPM.
  - Reasons for using TPM.
  - Reasons for not using TPM.
  - Users' price satisfaction.

##### **A. TPM USER BASE PENETRATION**

- Analysis of user responses indicated varying levels of TPM usage by country, as shown in Exhibit IV-1. When compared with the proportion of total maintenance revenues earned by TPM, the TPM levels base penetration gives an indication of the current intensity of use of TPM.
- In the relatively mature TPM market of the U.K. about 40% of users contract maintenance to TPMs, representing 8.5% of the total U.K. maintenance market revenues.



EXHIBIT IV-1

TPM USER BASE PENETRATION AND INTENSITY OF  
TPM USAGE, 1985

COUNTRY	NUMBER OF RESPONDENTS	PERCENT NOT USING TPM	PERCENT USING TPM	TPM = PERCENT OF TOTAL MTCE REVENUE 1985
United Kingdom	156	62%	38%	8.5%
France	169	91%	9%	3.1%
West Germany	156	92%	8%	1.2%
Italy	116	82%	18%	1.1%
Netherlands	82	76%	24%	3.5%
Sweden	97	64%	36%	3.8%
All	776	79%	21%	3.6%



- In the Netherlands, about a quarter of all users use TPMs, with these revenues representing under 4% of the total maintenance revenues.
- In Sweden, however, although it appears that around one-third of users use TPMs for maintenance, the revenues generated represent less than 4% of total maintenance revenues, indicating that TPM is more thinly spread than in the U.K. or the Netherlands.
- In Germany, TPM revenues represent only just over 1% of all maintenance revenues and are earned from less than 10% of all users, indicating an intensity of TPM usage similar to that found in Sweden. Growth in this market will, however, be faster than in Sweden where user resistance may be encountered earlier.
- In the relatively younger markets of France and Italy two extremes are noticeable.
- In France, where approximately 3% of all maintenance revenues are generated by TPMs and where TPM usage is under 10%, there is greater intensity of TPM usage than in the U.K., for example, indicative of a potential for fast market growth.
- In Italy, however, only about 1% of total maintenance revenues are earned by TPMs from a penetration of nearly 20% of the user base, indicating wide but cautious interest in TPM.
- Theoretically, if TPMs were used as the single-source of maintenance by a country's users, the percentage penetration of TPM in the user base and in the total maintenance revenues would be approximately equal. Since TPM user base penetration is greater than TPM penetration of total maintenance revenues, single-source maintenance by TPMs cannot be employed by every user.



## B. EQUIPMENT MAINTAINED BY TPMs

- All 153 user respondents using independent maintainers gave details of the type of equipment maintained, as analysed in Exhibit IV-2.
- The majority of respondents (about 60%) use TPMs to maintain peripherals and terminals whilst only about 40% use TPMs to maintain computer systems and a similar percentage for office systems.
- Since the proportion of respondents using TPMs for peripherals and terminals is greater than that using TPM for computer systems there is a clear indication that there are sites where only the peripherals are maintained by TPMs.
- This implies that users continue to place more confidence in equipment manufacturers to maintain CPUs. Although TPMs are earning revenues from a broad user base, the indication is that many clients are still not convinced of the ability of independent maintainers to undertake single-source mixed installation maintenance.

## C. REASONS FOR USING TPM

- Exhibit IV-3 shows the most frequently mentioned reasons given by respondents for using TPM services:
  - Cost.
  - Convenience.
  - Efficiency.





## EXHIBIT IV-2

## TYPES OF DP EQUIPMENT MAINTAINED BY TPMS

COUNTRY	NUMBER OF MENTIONS				COUNTRY TOTAL
	COMPUTER SYSTEM	PERIPHERALS TERMINALS	OFFICE SYSTEMS	OTHER	
United Kingdom	15	34	31	2	59
France	13	11	1	0	15
West Germany	4	6	3	1	13
Italy	10	16	9	4	21
Netherlands	9	13	9	0	19
Sweden	11	15	12	1	26
All	62	95	65	8	153

NB: Multiple responses allowed since respondents may use TPMS to maintain more than one category of equipment



EXHIBIT IV-3

REASONS FOR USING TPM

COUNTRY	NUMBER OF MENTIONS				COUNTRY TOTAL
	COST	CONVENIENCE	EFFICIENCY	OTHER	
United Kingdom	31	24	16	9	59
France	9	4	1	0	15
West Germany	7	3	0	0	13
Italy	17	5	10	2	21
Netherlands	10	6	7	5	19
Sweden	12	7	9	3	26
All	86	49	43	19	153

N.B. Multiple responses are allowed since respondents may give more than one reason for using TPM



- At both the European and individual country level, the most frequently cited reason for using TPMs was cost; in other words, the prime motivation appears to be the lowering of current maintenance expenditure.
- The secondary reason in the U.K., France, and Germany was convenience, while respondents in Italy, the Netherlands, and Sweden gave efficiency as their second reason.

#### D. REASONS FOR NOT USING TPM

- Exhibit IV-4 shows an analysis of the views of respondents not currently using TPM.
- The majority of users gave reasons associated with the maintenance service provided by manufacturers.
- Three levels of satisfaction were apparent amongst the user comments which began 'We do not use TPMs because':
  - 'we are satisfied with the service provided by the manufacturer'.
  - 'we use the manufacturer's service'.
  - 'the manufacturer has advantages over TPMs'.
- Users cited the following as advantages which the manufacturer has over TPMs:
  - Better technical knowledge of the hardware.
  - Better availability of spare parts.



## EXHIBIT IV-4

## REASONS FOR NOT USING TPM

	PERCENT*					
	UK	FRANCE	WEST GERMANY	ITALY	NETHERLANDS	SWEDEN
Satisfied with Vendor Service	41%	46%	23%	36%	43%	80%
Vendor Service has Advantages	8%	7%	10%	4%	4%	13%
Use Vendor Service	15%	3%	16%	10%	12%	18%
Tied to Vendor Contract	6%	3%	4%	1%	2%	5%
Weakness of TPM Service	8%	5%	13%	21%	10%	13%
Unaware of TPM/Not Approached Yet	3%	12%	20%	9%	4%	3%
Do Not Need TPM	6%	1%	2%	0%	6%	8%
Have Considered and Rejected TPM	0%	3%	1%	0%	0%	0%
Considering Using TPM	0%	11%	2%	6%	2%	0%
Fear/Risk of Using TPM	0%	7%	6%	0%	0%	2%
In-House Support	6%	0%	2%	13%	8%	6%
Other Reasons	4%	2%	1%	6%	6%	0%
Sample Size	93	152	142	95	60	52

\* Column totals do not add-up to 100% since not all respondents answered this question.





- Better quality of service.
- Peace of mind from using the manufacturer.
- However, some users noted that they were tied down by contractual or warranty conditions and could not change their source of maintenance even if they wanted to.
- Respondents also referred to perceived weaknesses in the TPM service, such as:
  - 'TPMs are middle men who have to go through the manufacturer so their service must be more expensive'.
  - 'The manufacturer will not buy back equipment if it has been maintained by TPMs'.
  - 'Parts are not always available to TPMs'.
  - 'We are based in a small town and it would be difficult for a TPM from the city to provide adequate service'.
- The proportion of respondents who were unaware of the TPM option who had not been approached by TPM companies ranged from 3% or 4% in the developed markets of the U.K., the Netherlands, and Sweden to 9% in Italy and 12% in France.
- In Germany this figure was 20%, indicating a lack of aggressive marketing by TPMs.
- German respondents also recorded the lowest satisfaction with the manufacturer/vendors service at 23% of respondents.



- Respondents considering using TPMs ranged from 11% of the sample in France to 0% in the U.K. and Sweden.
- A further group, notably 7% in France and 6% in West Germany, were put off using TPMs because of concern about relations with the vendor or manufacturer of the equipment.

#### E. MAINTENANCE PRICE SATISFACTION

- Exhibit IV-5 shows the analysis of responses concerning the question of satisfaction with maintenance prices.
- The answers of all respondents who were TPM users, taken together, shows that 55% were satisfied and 45% dissatisfied with the price of TPM maintenance.
- The highest levels of satisfaction with TPM pricing were noted amongst TPM users in France and the Netherlands, albeit based on a small sample.
- The greatest dissatisfaction with TPM prices was observed in Italy, where the largest proportion using TPM for cost reasons was noted at 17 of 21 respondents.
- A similar result was noted in Germany, where 7 out of 13 respondents chose TPM for cost reasons but 50% of respondents were dissatisfied with TPM pricing.
- These higher levels of dissatisfaction with TPM pricing may be due, in part, to higher expectations of cost savings which are not possible in TPM markets dominated by small firms operating on a local rather than national basis.



## EXHIBIT IV-5

## USER MAINTENANCE PRICE SATISFACTION

COUNTRY	PERCENT SATISFACTION WITH MAINTENANCE PRICE					
	TPM USERS (Percent)			NON-TPM USERS (Percent)		
	Satisfied	Dissatisfied	Sample	Satisfied	Dissatisfied	Sample
United Kingdom	54%	46%	57	64%	36%	82
France	86%	14%	14	56%	44%	132
West Germany	50%	50%	12	42%	58%	123
Italy	45%	55%	20	44%	56%	93
Netherlands	63%	37%	18	51%	49%	57
Sweden	48%	52%	26	45%	55%	47
All	55%	45%	147	50%	50%	634



- Levels of satisfaction and dissatisfaction with maintenance pricing amongst the total 534 respondents not using TPM were equally split.
- In the U.K. and France the majority of respondents are satisfied with maintenance pricing while in Germany, Italy, and Sweden the majority of respondents are dissatisfied with maintenance pricing.
- With the exception of the U.K., price satisfaction appears to be greater amongst TPM users than non-TPM users.





## V INDEPENDENT TPM PERSPECTIVES







## V INDEPENDENT TPM PERSPECTIVES

- This chapter examines independent TPM views of the following various aspects of the market:
  - Factors promoting the growth of TPMs.
  - Factors hindering the growth of TPMs.
  - Opportunities for new entrants.
  - TPM relations with manufacturers.
  - Competitive trends.

### A. FACTORS PROMOTING TPM GROWTH

- Respondents identified four categories of factors which will promote the growth of TPM in Europe. These relate to:
  - The users.
  - The hardware to be maintained.



- The hardware manufacturers.
- Factors within the direct control of the TPM companies.
- Concerning the users, respondents commented that:
  - 'Users need and want TPM'.
  - 'Users need single-source maintenance'.
  - 'Users prefer on-site service to a return-to-vendor maintenance contract'.
  - 'Users are dissatisfied with the quality of maintenance service provided by the manufacturer'.
  - 'Users are increasingly receptive to TPM'.
- Taken together, these comments suggest the course of action open to TPMs.
- To capitalise on user receptivity to TPM caused by user dissatisfaction with the manufacturers' service, TPMs must offer better quality service. Where TPMs cannot offer a significant price advantage over the manufacturers' service, TPMs can emphasise the benefits of on-site service in the form of shorter time to repair.
- It is important to note, however, that single-source maintenance contracts will be under increasing competitive pressure from manufacturers' TPM activities in the U.K. (see Chapter VI).
- Respondents made the following comments on hardware:





- Modular construction makes for faster repair times, so an engineer can repair more machines in a day.
- The proportion of mixed installation sites is increasing.
- Faster repair times will also lead to tougher price competition for the sites where many machines are installed since these represent an opportunity to reduce an engineer's unproductive time spent travelling from one site to another.
- The growth of mixed installation sites will only represent an opportunity if TPMs can offer to support all the machines on the site. Once again, the tendency for users to prefer manufacturer maintenance for minis and mainframes linked with the entry of manufacturers into the highly competitive TPM field of PC and peripheral maintenance indicate a much more competitive environment in the future.
- The comment made most often by users about hardware equipment referred to the expected growth of the installed base of machines.
- Although it is true that each new unit sold represents an opportunity for TPMs to increase their revenues, growth of the TPM market cannot come from installed base growth alone. Many more machines will be sold to users who prefer manufacturer maintenance than to users who have single-source maintenance contracts from TPM, and this will encourage manufacturers to increase their TPM activity and encourage users to demand it.
- If users really do want single-source maintenance, the TPMs strategic objective must be to develop the ability to maintain the CPU to which the workstations, monitors, and peripherals are connected. When selecting a maintenance contractor, users will judge this capability first.



- Respondents also commented on the hardware manufacturers and how they might promote the growth of TPMs:
  - Where a manufacturer cannot provide all aspects of service, the TPM can complement the manufacturer's activities.
  - Dealers and distributors, as well as manufacturers that do not wish to set up their own maintenance service, can subcontract this out to TPMs.
- INPUT believes that sole maintenance rights are only likely if the TPM in question can offer and guarantee a full nationwide service in the appropriate country market. The aspect of complementarity does, however, offer a safer route than head-on competition with manufacturers who can at present delay supplies of spare parts to the point where the user finds the service inefficient.
- In the U.S. this problem has been bypassed by the entry of fourth-party maintainers who supply reconditioned and new parts to TPMs. Among the European markets, the U.K. is most likely to develop such companies first.
- Respondents also believe that the TPM companies can encourage the growth of the market since TPMs have a much better reputation for high-quality service at a low price.
- However, even in the U.K., the largest European TPM market, TPM revenues represent only 8.5% of total maintenance revenues, earned from approximately 38% of the users. This would appear to indicate that the TPM benefits of high-quality service at low price must be marketed still more aggressively.



## B. FACTORS HINDERING TPM GROWTH

- Respondents' views of factors hindering the growth of TPM can be categorised into the same four areas as for promotional factors, namely:
  - The users.
  - The hardware to be maintained.
  - The hardware manufacturers.
  - Factors within the control of the TPM companies.
- Since the number of comments made on hindering factors was half that made for factors encouraging growth, INPUT believes that TPMs are generally optimistic about the growth of TPM.
- Respondents in all countries except Italy commented on user pressure for lower maintenance prices. In France and the U.K. this has led to a shift away from percentage pricing and towards time and materials maintenance pricing.
- TPMs in France and Germany believe that users are unwilling to experiment or take risks with TPM, although German TPMs commented that manufacturer approval has helped to remove this obstacle.
- Improvements in the reliability of hardware, seen by some TPMs as an advantage, can also create problems:
  - Lengthening MTBFs will reduce the growth rate of the demand for maintenance.



- If reliability continues to improve at the rate it has done over the past five years, manufacturers may extend warranty periods.
- INPUT notes that in April 1986 IBM announced three-year warranty periods on two monitors which replaced discontinued models and that the falling price of Japanese printers has almost led to built-in obsolescence, with repair costs approaching upgrade or replacement costs.
- TPM respondents were also concerned by the extent to which they were dependent upon the manufacturers; some typical comments were:
  - 'Unless you have an agreement with a manufacturer, it can be very difficult to get spare parts within a reasonable time'.
  - 'The Japanese manufacturer we deal with is very good at supplying parts but technical specifications are liable to change without notice'.
  - 'Manufacturers are anti-TPM because it reduces their own opportunities for using maintenance as a vehicle for upgrade sales'.
- Although DPCE has attempted to set a precedent in the U.K. for the supply of technical information, INPUT notes that DPCE is the largest TPM company in Europe.
- Given the relative size and resources of TPMs and manufacturers, INPUT doubts that there are many TPMs which would be able to devote the necessary resources to conducting a similar campaign.
- Until the introduction of secondary sources of spare parts such as fourth-party maintainers as seen in the U.S., TPMs, in particular small firms, will be forced to accept the manufacturers' policy on spares. It should be noted that manufacturers must keep to the rules of fair trading when dealing with TPMs.





- Respondents felt that there were in-house problems to be overcome if TPMs were to realise their full growth potential; some comments were:
  - 'Finding the right level of price and quality of service to appeal to the users is very difficult'.
  - 'Finding good engineers is not at all easy'.
  - 'Training a new engineer to become a productive member of the team can take up to 12 months'.
- Whilst staff poaching may provide a short-term solution to the individual firm, the effects on the industry in the long term will not be beneficial; however:
  - An increase in average wages would lead to a reduction in margins since user pressure on pricing is unrelenting.
  - Larger TPMs who can at present budget for four to five weeks of training per year per engineer will reduce educational expenditures if staff turnover reaches unacceptable levels, leading to lower quality of service and a reduced ability to expand services to new types of equipment.
- Although TPMs are generally optimistic about growth opportunities, the future of the situation was summed up by one respondent--'if TPM grows, it will be in spite of, rather than because of, the manufacturers'.

### C. NEW ENTRANTS

- Respondents were asked whether they considered the TPM market to be attractive for new entrants.



- In the U.K. opinions for and against were equally divided, but respondents said that new entrants would only survive in the long term if:
  - They operated at a local rather than nationwide level.
  - They specialised in a hardware or industry niche.
- Respondents also noted that:
  - Profit margins were thinner than before.
  - New entrants often underestimated the capital investment required for an adequate stock of spare parts.
- INPUT estimates that there have been less than 10 new entrants to the U.K. market during the past 12 months.
- French respondents considered that market conditions are favourable for new entrants and will continue to be so for the next two to three years.
- In Germany, respondents commented that users perceived maintenance with TPMs as a risk and that this discourages potential new entrants.
- Moreover, German TPMs founded by engineers who had left major vendors were, in the words of one respondent, 'mistrusted'.
- In spite of the conservative views of the German users, one respondent felt that the opportunities for small new entrants at the regional level were good.
- Italian respondents said that user awareness of TPM, although at a low level, was increasing and that this would help to create favourable conditions for new entrants.



- Dutch respondents said that both the market and the profit margins were attractive to new entrants but that very high levels of investment were required in stocks of spares.
- Specialisation in hardware niche markets would, however, reduce the magnitude of the initial investment.
- In Sweden, respondents noted the importance of customer care and that this attitude should be apparent to the client when making a sales presentation.
- The level of investment required to start-up a new TPM in Sweden is increasing and many new entrants are dealers who benefit from ready-made sales leads.
- Total service is becoming an important issue for success in the Swedish market as users look for single-source maintenance for software as well as hardware.

#### D. TPM RELATIONS WITH MANUFACTURERS

- TPM companies are only too aware of their dependence upon manufacturers of hardware for technical information and spares.
- Respondents' comments appeared to be equally divided between good and bad relations with manufacturers.
- However, none of the respondents who referred to agreements with a manufacturer had unfavourable comments to make.
- TPMs' comments are shown in Exhibit V-I.



EXHIBIT V-1

RESPONDENTS' PERCEPTIONS OF  
MANUFACTURERS' ATTITUDES TOWARDS TPM

- 'We have no problems; we have an agreement with the manufacturer'.  
(United Kingdom, Holland, Germany, Italy, Sweden)
- 'We expect relations to improve'.  
(Holland)
- 'Relations have become more difficult over the past year'.  
(Holland)
- 'Manufacturers are becoming defensive; they sometimes block deliveries of spares'.  
(France)
- 'The availability of spares is very awkward - sometimes it is better to buy whole units and break them up for spares'.  
(West Germany)
- 'Some manufacturers can be very obstructive'.  
(West Germany)
- 'The situation is stable; it is not a problem'.  
(Sweden)





- A respondent in Holland also noted that 'cooperation with TPMs is forced upon vendors/manufacturers by users who will refuse to buy equipment if it cannot be supported by TPMs'.
- This additional comment was from a French TPM--'There are two ways of doing TPM: you can compete with the manufacturers or you can complement them. We do the latter and have agreements with the manufacturers'.

#### E. COMPETITIVE TRENDS

- The majority of TPM vendors said that their main source of competition came from other TPMs, as can be seen from the analysis shown as Exhibit V-2.
- This was particularly true of the U.K. vendors, where TPM service on a national basis is well developed.
- TPM vendors' views of the future indicate a significant shift in perceptions of the main source of competition to hardware vendors who offer mixed installation maintenance.
- The majority of respondents who gave an opinion on the future sources of competition were U.K. TPMs.
- However, vendor maintainers commented that they were treating the U.K. as a risk market and would, if the experiment proved successful, examine the possibilities of similar activities in other European countries.
- France and Italy were mentioned as potential markets for the expansion of mixed installation maintenance by vendors.



EXHIBIT V-2

TPM: SOURCES OF COMPETITION

	NEW?	IN 3-5 YEARS TIME?
Other TPMs	70%	15%
Manufacturers who maintain only their own equipment	15%	15%
Manufacturers who maintain several brands of equipment	15%	60%
In-house maintenance	0%	10%



## VI MANUFACTURER ENTRY INTO TPM









## **VI MANUFACTURER ENTRY INTO TPM**

- As noted in the introduction, the market for third-party maintenance is now served by:
  - Independent TPMs.
  - Manufacturers who offer TPM.
- This chapter examines the developments which have led some manufacturers to enter the TPM market and the benefits which such a move offers to manufacturers.
- Profiles of three manufacturers currently active in TPM are included, giving their reasons for entering the TPM market, their strengths and limitations, and their objectives.

### **A. MANUFACTURER MOTIVATIONS FOR ENTRY INTO TPM**

- The primary objective of the hardware manufacturers is to develop, produce, and market hardware. Until recently, manufacturers viewed maintenance as a support activity which could assist the sales effort by increasing the user's positive perception of the supplier.

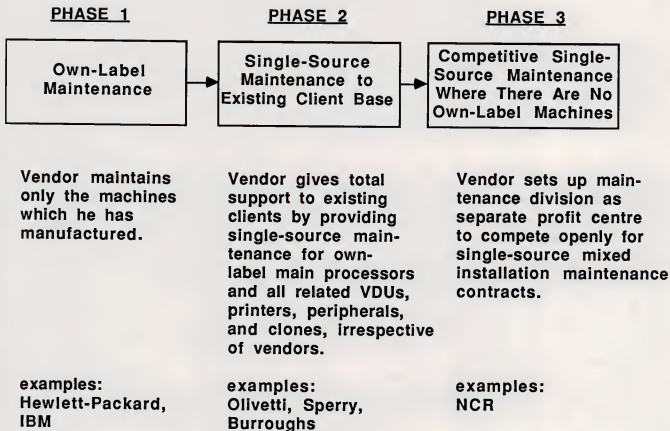


- Originally, maintenance costs were bundled with hardware pricing and treated as an overhead to be held in check. This led to a relatively low priority being placed on service.
- Demarcation of maintenance responsibilities led to user dissatisfaction, leading in turn to the evolution of independent maintenance companies.
- Recent sales patterns have highlighted the vulnerability of hardware sales growth to fluctuations in exchange rates and the general levels of investment in an economy.
- The response of manufacturers to these trends, and in particular to the threat of increased competition, has been to separate maintenance services from hardware sales and develop them as a profit centre in their own right.
- Three distinct phases in the development of manufacturer maintenance services are discernible, as shown in Exhibit VI-I. Phases II and III bring manufacturers into competition with independent TPMs.
- There are, however, limitations to manufacturer involvement which, although unstated, indicate strategic paths open to independent TPMs.
- Whilst manufacturers generally agree that all PC clones, printers, VDUs, workstations, and peripherals are open to competitive tenders in a single-source maintenance contract, INPUT believes that manufacturers are very wary of entering into maintenance of another vendor's minis or mainframes.
- In order to undertake the maintenance of minis or mainframes, it would be necessary to have a stock of spare parts, representing a considerable investment, and access to technical information.
- This would place the TPM manufacturer in the awkward situation of being completely unable to deny that they knew how a competitor's machine was constructed in the event of a law suit for breach of patents or copyrights.



EXHIBIT VI-1

THE EVOLUTION OF MANUFACTURER MAINTENANCE





- On a more basic level, no major vendor could expect another to supply technical information and parts unless the arrangement were reciprocated, and this would render any major manufacturer's client base open to maintenance bids from a competitor.
- Such a policy is highly improbable since it would be an invitation to predatory pricing to gain market share which could lead to an all-out maintenance price war.
- From the viewpoint of the manufacturer active in Phase 2 maintenance, the answer is simply to aim at contracts which do not involve a mini or mainframe produced by another major manufacturer. The group most seriously affected by this strategy would be independent TPMs.
- Manufacturers adopting such a strategy hold several key advantages:
  - Their engineering workforces are as large, if not larger than, the biggest TPMs.
  - The financial reserves at their disposal and their fundraising activities will permit expansion of Phase 2 maintenance activities at a faster rate than most TPMs.
  - The benefits from entering Phase 2 or Phase 3 maintenance activities are not available to independent TPMs.

#### **B. MANUFACTURER BENEFITS FROM TPM**

- Whilst a TPM will only visit a client's site to repair a machine, manufacturers can:





- Provide essential client contact.
- Obtain feedback on future hardware needs, thus collecting sales leads.
- Cater for other client needs, for example:
  - . Professional services.
  - . Software support.
  - . Consultancy.
  - . Other product sales.
- The benefits of entering third-party maintenance are clear from the manufacturers' comments shown in Exhibits VI-2, VI-3, and VI-4. It is also apparent that these manufacturers perceive their current competitors to be independent TPMs and are seeking to play a substantial role in TPM in the U.K.
- Independent TPMs have proven that maintenance can be a profitable activity in its own right and have achieved turnover and profits at the expense of the manufacturers.
- Many manufacturers have recently experienced a slowdown in revenue growth from hardware sales, and where this has occurred in conjunction with growth in shipped units, the margins have suffered.
- Manufacturers need to maintain control over their client base and to be seen to be looking after their customers simply to maintain market share. Continued contact with clients will not only supply sales leads for upgrade or add-on sales, it will provide market response indicating clients needs for future products.



MANUFACTURERS ACTIVE IN TPM: COMPANY 1

- 'We have 455 engineers in the United Kingdom, of which 70 are in-house bench engineers'.
- 'We have 12 customer service centres and 6 regional centres in the United Kingdom'.
- 'We have entered TPM because it gives the company a better image'.
- 'We are particularly interested in multi-user sites'.
- 'Maintenance of other manufacturers equipment represented 10% to 12% of our maintenance received in 1985, but we need to increase this to 50% of maintenance revenue within 5 years'.
- 'We are always open-minded about acquisitions - the main reason is to obtain engineering skills which we do not currently have'.



EXHIBIT VI-3

MANUFACTURERS ACTIVE IN TPM: COMPANY 2

- 'We have maintenance operating in 128 countries worldwide'.
- 'Customers do not just shop around for hardware - they shop around for maintenance, too. What they really want is single-source maintenance'.
- 'We are offering TPM because we want to keep the customer satisfied and because we want the revenues'.
- 'In addition to our own equipment, we will maintain PCs, printers VDUs, telecomms, and other equipment similar to our own product range'.
- 'Our aim is to establish agreements with other manufacturers, particularly where they do not already have a maintenance organisation - this benefits both parties'.
- 'We will also maintain sites where we do not have any of our own equipment installed and have recently appointed a TPM manager'.



EXHIBIT VI-4

MANUFACTURERS ACTIVE IN TPM: COMPANY 3

- 'We have 650 staff in customer service in the United Kingdom, of which 350 are engineers'.
- 'There are 12 service centres in the United Kingdom and we can compete with any national TPM '.
- 'We will maintain anything attached to one of our mainframes on a client's site - PCs, VDUs, peripherals, or printers'.
- 'The main reason for entering the mixed installation market was the revenue opportunity'.
- 'We have a specialist group dedicated to TPM which has recently increased its staff. Further increases in staff are foreseen'.
- 'We have talked to some of the smaller manufacturers about reciprocal maintenance but have not reached any agreement as yet'.
- 'We are also starting to provide maintenance to the new BS standard 5750 part 2 so that we can compete for government contracts'.

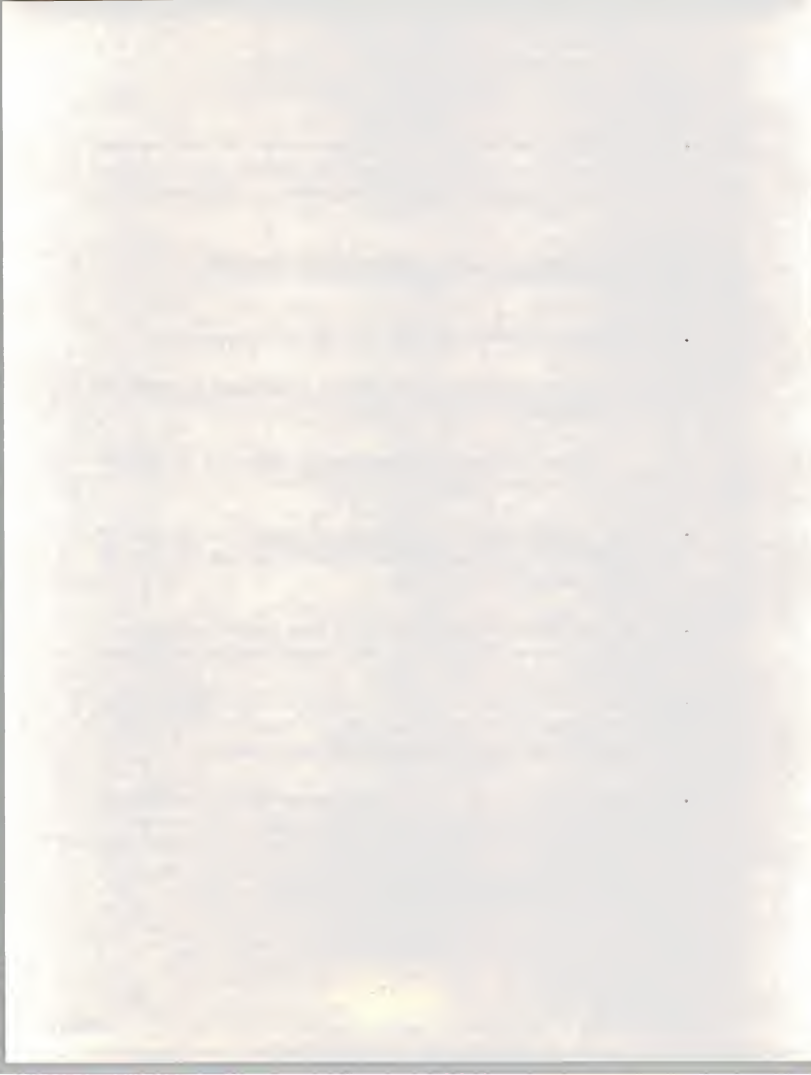




- Manufacturers need additional sources of revenue which will permit continued R&D expenditures to develop more competitive products. Users want single-source maintenance, and manufacturers are increasingly willing to supply it.

### C. TPM STRATEGIES AGAINST MANUFACTURER COMPETITION

- Independent TPM service was founded on two unique selling propositions:
  - A single-source maintenance contract which avoided demarcation of responsibility.
  - The ability to cover any or every item of equipment at an installation irrespective of vendor.
- User research indicates that single-source maintenance in Europe is still the exception rather than the rule because of users' continued preference for manufacturer maintenance of CPUs.
- Now that manufacturers are entering TPM, users may well find them more satisfactory for single-source maintenance contracts than independent TPMs.
- In order to strengthen the chances of long-term survival in competition with manufacturers in TPM, INPUT recommends that independent TPMs undertake maintenance of a clearly defined range of minis or mainframes.
- Those already active in this sector are recommended to consolidate their position by offering maintenance for a second range of minis or mainframes from a different manufacturer. This represents a new unique selling proposition which manufacturers are unlikely to duplicate and which will become increasingly valuable as mixed installations become more common.



- The skills necessary to undertake this expansion may be acquired by a takeover or by recruitment. However, INPUT notes that there appears to be considerable interest in certain ranges of hardware which may lead to an oversupply of maintenance in the medium term. Therefore, careful selection of niche markets is advisable.
- Independent maintainers have long used their separation from manufacturers as a major sales benefit. Such impartiality will continue to be valid, but claims may be weakened if the TPM is linked to the distribution chain by an agency agreement.



**APPENDIX A: THE TOP 15 INDEPENDENT U.K. TPMs -  
PROFILES**









## **APPENDIX A: THE TOP 15 INDEPENDENT U.K. TPMs - PROFILES**

- Exhibits A-1 through A-15 are profiles of the top 15 independent TPM companies in the U.K., ranked by U.K. TPM revenue.
- Other company information included is the number of employees, number of engineers, and the types of equipment maintained in the U.K.



EXHIBIT A-1

COMPANY PROFILES: UNITED KINGDOM  
COMPUTER FIELD MAINTENANCE

COMPANY: COMPUTER FIELD MAINTENANCE

ADDRESS: EXCELL HOUSE

: TRUST INDUSTRIAL ESTATE

: HITCHIN

: HERTS

TELEPHONE: 0462-51511

COMPANY INFORMATION

Number of Service Centres in UK 22

Number of Employees in TPM 443

Number of Engineers in UK 335

Field Engineers: 296

Bench Engineers: 39

Turnover Derived from TPM in UK:

Actual/Expected, 1985: £ 11.8 Million

Target (12 Months) 1986: £ 15.3 Million

Profit Before Tax: £ 1.507 Million

TYPE OF EQUIPEMENT MAINTAINED:

Mainframes: IBM

Minis: ALPHA, CA, Data General, DEC, IBM, Molecular, ONYX, PLEXUS

Business PCs: ACT APRICOT, DEC, Phillips, Ranger, Selko, Televideo, Xerox

Peripherals: VDUs, Terminals, Printers, Tape Drives, Disk Drives, Plotters, Controllers

Other Equipment: PCs and ATM Equipment

Notes: Because of takeover by Branada, the financial year end date will change. The accounting year 1986-1987 will there fore comprise only 9 months.



EXHIBIT A-2

COMPANY PROFILES: UNITED KINGDOM  
BELL TECHNICAL SERVICES

COMPANY: BELL TECHNICAL SERVICES

ADDRESS: 13 Mount Road

: Hanworth

: Feltham

: Middlesex

TELEPHONE: 01-898-9631

COMPANY INFORMATION

Number of Service Centres in UK: 35

Number of Employees in TPM: 330

Number of Engineers in UK: 260

Field Engineers: No Distinction Made

Bench Engineers: No Distinction Made

Turnover Derived from TPM in UK:

Actual/Expected, 1985: £ 11.0 Million

Target (12 Months) 1986: £ 14.3 Million

Profit Before Tax: £ 1.32 Million

TYPE OF EQUIPMENT MAINTAINED:

Mainframes:

Minis: DEC, Internet, Data General, SDS, CA

Business PCs: Apple, Elbit, Gemini, Osborne, NEC, Sage, IBM, ACT

Peripherals: VDUs, Printers, Plotters

Other Equipment: Disk Drives

Notes:



EXHIBIT A-3

COMPANY PROFILES: UNITED KINGDOM  
DPCE (UK) Ltd.

COMPANY: DPCE (United Kingdom) Ltd.

ADDRESS: Cumberland House

: Old Bracknell Lane West

: Bracknell

: Berks RG 12 4AE

TELEPHONE: 0344-485 666

COMPANY INFORMATION

Number of Service Centres in UK: 17

Number of Employees in TPM in UK: 350

Number of Engineers in UK: 290

Field Engineers: 275

Bench Engineers: 15

Turnover Derived from TPM in UK:

Actual/Expected, 1985: £ 9.9 Million

Target (12 Months) 1986: £ 11.9 Million

Profit Before Tax: £ 1.2 Million

TYPE OF EQUIPMENT MAINTAINED:

Mainframes: All Major Manufacturers

Minis: All Major Manufacturers

Business PCs: All Major Manufacturers

Peripherals: All Major Manufacturers

Other Equipment: Process Control Equipment

Notes:





EXHIBIT A-4

**COMPANY PROFILES: UNITED KINGDOM  
MAINSTAY COMPUTER COVER LTD.**

**COMPANY: MAINSTAY COMPUTER COVER Ltd.**

**ADDRESS: Mainstay House,**

**: 10 Eden Place,**

**: Cheadle,**

**: Cheshire**

**TELEPHONE: 061-428-0880**

**COMPANY INFORMATION**

**Number of Service Centres In UK: 6 plus head office**

**Number of Employees In TPM: 130**

**Number of Engineers In UK: 80**

**Field Engineers: 65**

**Bench Engineers: 15**

**Turnover Derived from TPM in UK:**

**Actual/Expected, 1985: £ 5.8 Million**

**Target (12 Months) 1986: £ 10.2 Million**

**Profit Before Tax: N/A**

**TYPE OF EQUIPMENT MAINTAINED:**

**Mainframes: IBM and Compatibles**

**Minis: IBM and Compatibles**

**Business PCs: IBM and Clones**

**Peripherals: VDUs, Printers, and Terminals**

**Other Equipment: Telecomms**

**Notes:**



EXHIBIT A-5

COMPANY PROFILES: UNITED KINGDOM  
MBS RENTALS LTD.

COMPANY: MBS RENTALS Ltd.

ADDRESS: UNITC, Horton Trading Estate

: Stanwell Road

: Horton

: Bucks SL3 9PS

TELEPHONE: 0753 - 684 515

COMPANY INFORMATION

Number of Service Centres in UK: 11

Number of Employees in TPM: 160

Number of Engineers in UK: 110

Field Engineers: 80

Bench Engineers: 30

Turnover Derived from TPM in UK:

Actual/Expected, 1985: £ 5.6 Million

Target (12 Months) 1986: £ 7.0 Million

Profit Before Tax: £ 0.6 Million

TYPE OF EQUIPMENT MAINTAINED:

Mainframes:

Minis:

Business PCs: IBM, Jacquard, Telex, Altos, Apple, Apricot, Compaq, Sirius, and Novel

Peripherals: VDUS, Printers, and Terminals

Other Equipment:

Notes:



EXHIBIT A-6

COMPANY PROFILES: UNITED KINGDOM  
DDT MAINTENANCE

COMPANY: DDT MAINTENANCE

ADDRESS: 58-64 Northfields Road,

: Kings Norton,

: Birmingham

:

TELEPHONE: 021-458-3205

COMPANY INFORMATION

Number of Service Centres in UK:	12
Number of Employees in TPM:	220
Number of Engineers in UK:	145
Field Engineers:	105
Bench Engineers:	40

Turnover Derived from TPM in UK:

Actual/Expected, 1985: £ 4.6 Million

Target (12 Months) 1986: £ 6.5 Million

Profit Before Tax: £ 1.0 Million

TYPE OF EQUIPMENT MAINTAINED:

Mainframes:

Minis:

Business PCs:

Peripherals: ☐ ATARI, ALTOS, APRICOT, COMPAQ, EQUIOX, EPSON, IBM, OCTOPUS,  
NORMEREL, OLIVETTI, SIRIUS, SIEMENS and Printers and Terminals

Other Equipment: MITEL and STC Telex, Modems, 2005 Compact Telephone, Satellite TV equipment

Notes: Software support and training also offered.



EXHIBIT A-7

COMPANY PROFILES: UNITED KINGDOM  
(KSL) KODE SERVICES LTD.

COMPANY: (KSL) KODE SERVICES Ltd.

ADDRESS: Station Road,

: Calne,

: Wiltshire

: SN 11 OJR

TELEPHONE: 0249-813-771

COMPANY INFORMATION

Number of Service Centres in UK:	7
Number of Employees in TPM:	156
Number of Engineers in UK:	110
Field Engineers:	80
Bench Engineers:	30

Turnover Derived from TPM in UK:

Actual/Expected, 1985 £ 4.5 Million

Target (12 Months) 1986: £ 5.0 Million

Profit Before Tax:

TYPE OF EQUIPMENT MAINTAINED:

Mainframes:

Minis: PERTEC

Business PCs: APRICOT, COMART, COMPAQ, HM SYSTEMS, IBM, MILLBANK MACHINES, ZEUS

Peripherals: VDUs, Printers, and Terminals

Other Equipment: Telecomms, Telex, FAX Machines, Winchester Disk Drive Repair, Including: HDA Repair on 14", 8" 51/4", 31/2" drives,

Notes:





EXHIBIT A-8

COMPANY PROFILES: UNITED KINGDOM  
SMS INTERNATIONAL

COMPANY: SMS INTERNATIONAL

ADDRESS: UNIT AIR CENTRE

: GREAT SOUTH WEST ROAD

: FELTHAM

: MIDDLESEX TW 14 8LZ

TELEPHONE: 01-751-4451

COMPANY INFORMATION

Number of Service Centres in UK: 7

Number of Employees in TPM: 70

Number of Engineers in UK: 55

Field Engineers: -

Bench Engineers: -

Turnover Derived from TPM in UK:

Actual/Expected, 1985: £ 4.4 Million

Target (12 Months) 1986: £ 6.0 Million

Profit Before Tax:

TYPE OF EQUIPMENT MAINTAINED:

Mainframes: IBM

Minis: Storage Technology, Memorex Equipment

Business PCs: IBM, Memory Computers, Panasonic

Peripherals: Printers, Laser Printers, Terminals, VDUs

Other Equipment: Communications Equipment

Notes: SMS was purchased by Granada Group PLC in September 86 for £4.7 Million



EXHIBIT A-9

COMPANY PROFILES: UNITED KINGDOM  
SYSTEMS RELIABILITY PLC

COMPANY: SYSTEMS RELIABILITY PLC

ADDRESS: 400 Dallow Road,

: Luton

: Bedfordshire

: LUI IUR

TELEPHONE: 0582-455-455

COMPANY INFORMATION

Number of Service Centres in UK: 9

Number of Employees in TPM: 103

Number of Engineers in UK: 81

Field Engineers: 72

Bench Engineers: 9

Turnover Derived from TPM in UK

Actual/Expected, 1985: £ 3.5 Million

Target (12 Months) 1986: £ 4.2 Million

Profit Before Tax:

TYPE OF EQUIPMENT MAINTAINED:

Mainframes:

Minis:

Business PCs: ALPHA MICRO, ALTOS, COMPAQ, DYNABYTE, IBM, MICROSTAR,  
MOLECULAR, OLIVETTI, WYSE

Peripherals: VDUs, Printers, and Terminals

Other Equipment: MAG Tape Streamers, VCRs, Data Transfer, and Telephone Management systems.

Notes:



EXHIBIT A-10

COMPANY PROFILES: UNITED KINGDOM  
MILLS ASSOCIATES

COMPANY: MILLS ASSOCIATES

ADDRESS: Wonastow Road,

: Monmouth,

: Gwent

: NP5 4YE

TELEPHONE: 0600-4611

COMPANY INFORMATION

Number of Service Centres in UK:	10
Number of Employees in TPM:	170
Number of Engineers in UK:	130
Field Engineers:	90
Bench Engineers:	40

Turnover Derived from TPM in UK:

Actual/Expected, 1985: £ 3.2 Million

Target (12 Months) 1986: £ 4.1 Million

Profit Before Tax: £ 290,000 (estimate)

TYPE OF EQUIPMENT MAINTAINED:

Mainframes: ICL

Minis: ICL, ZILOG

Business PCs: APRICOT, COMART, COMPAQ, NEC, OLIVETTI, ZENITH

Peripherals: VDUs, Terminals, and most leading Printers

Other Equipment: Home computers (special workshop service)

Notes:



EXHIBIT A-11

COMPANY PROFILES: UNITED KINGDOM  
COMPUTERAID SERVICES LTD.

COMPANY: COMPUTERAID SERVICES Ltd.

ADDRESS: 2, Invincible Road

: Farnborough

: Hants

:

TELEPHONE: 0252 - 54 88 88

COMPANY INFORMATION

Number of Service Centres in UK: 9

Number of Employees in TPM: 110

Number of Engineers in UK: 80

Field Engineers: 40

Bench Engineers: 40

Turnover Derived from TPM in UK:

Actual/Expected, 1985: £ 3.2 Million

Target (12 Months) 1986: £ 4.2 Million

Profit Before Tax: £ 0.35 Million

TYPE OF EQUIPMENT MAINTAINED:

Mainframes:

Minis: DEC

Business PCs: Televideo, Future, IBM, Columbia

Peripherals: VDUs, Printers, and Terminals

Other Equipment: EFT-POS

Notes:





EXHIBIT A-12

COMPANY PROFILES: UNITED KINGDOM  
QUEST INTERNATIONAL COMPUTER SERVICES

<b>COMPANY: QUEST INTERNATIONAL COMPUTER SERVICE</b> <b>ADDRESS: School Lane</b> : Chandlers Ford : Hampshire : SO5 344 <b>TELEPHONE: 04215-66321</b>	
<b><u>COMPANY INFORMATION</u></b> Number of Service Centres in UK: 6 Number of Employees in TPM: 107 Number of Engineers in UK: 92 Field Engineers: 74 Bench Engineers: 18  Turnover Derived from TPM in UK: Actual/Expected, 1985: £ 3.0 Million Target (12 Months) 1986: £ 3.8 Million Profit Before Tax:	
<b><u>TYPE OF EQUIPMENT MAINTAINED:</u></b>  <b>Mainframes:</b>  <b>Mins:</b>  Business PCs: ACT, APRICOT, ACT SIRIUS, GIFFORD, IBM, KAYPRO, OLIVETTI, PERTEC, VICTOR, LOREN, EXECUTIVE Peripherals: Word Processors, Printers, Plotters, Monitors, VDUs Other Equipment: Controllers and Subsystems, CAD/Graphics Systems, Communications equipment	
<b>Notes:</b>	



EXHIBIT A-13

COMPANY PROFILES: UNITED KINGDOM  
SUN COMPUTER MAINTENANCE

COMPANY: SUN COMPUTER MAINTENANCE

ADDRESS: 4, Crown Business Centre

: Horton Road

: West Drayton

: Middlesex

TELEPHONE: 01-890-1440

COMPANY INFORMATION

Number of Service Centres in UK: 65

Number of Employees in TPM: 51

Number of Engineers in UK: 45

Field Engineers: 6

Bench Engineers:

Turnover Derived from TPM in UK:

Actual/Expected, 1985: £ 2.4 Million

Target (12 Months) 1986: £ 4.0 Million

Profit Before Tax:

TYPE OF EQUIPMENT MAINTAINED:

Mainframes:

Minis:

Business PCs: ACT SIRIUS, APPLE, COMPAQ, IBM, INTERTEC SUPERBRAIN, ZORBA

Peripherals: VDUs, Monitors, and Printers

Other Equipment: Communications equipment

Notes:



EXHIBIT A-14

COMPANY PROFILES: UNITED KINGDOM  
JAE CROW SYSTEMS SERVICES LTD.

COMPANY: JAE CROW SYSTEMS SERVICES Ltd.

ADDRESS: 29-31 Lower Coombe Street

: Croydon

: London

:

TELEPHONE: 01-680-9191

COMPANY INFORMATION

Number of Service Centres in UK:	2
Number of Employees in TPM:	70
Number of Engineers in UK:	40+
Field Engineers:	75%
Bench Engineers:	25%

Turnover Derived from TPM in UK:

Actual/Expected, 1985: £ 2.3 Million

Target (12 Months) 1986: £ 2.8 Million  
(estimate)

Profit Before Tax: N/A

TYPE OF EQUIPMENT MAINTAINED:

Mainframes:

Minis: Data General Nova look-alikes

Business PCs: COMPAQ, EPSON, IBM, OLIVETTI, TANDON, and Others

Peripherals: Printers - Diablo, DRE, Fujitsu, Mannesmann-Tally, OKI, QUME, and  
SINTROM; also Monitors

Other Equipment: Modems and Telex, Dedicated Word Processors

Notes: Jaecrow seeks good rapport with manufacturer to ensure supply of parts and  
technical information prior to undertaking maintenance of equipment.



EXHIBIT A-15

COMPANY PROFILES: UNITED KINGDOM  
ADVANCED TECHNOLOGY MAINTENANCE

COMPANY: ADVANCED TECHNOLOGY MAINTENANCE

ADDRESS: 21 BRISTOL ROAD

: METROPOLITAN CENTRE

: GREENFORD

: MIDDLESEX

TELEPHONE: 01-578-9222

COMPANY INFORMATION

Number of Service Centres in UK:

Number of Employees in TPM: 7

Number of Engineers in UK: 70

Field Engineers: 45

Bench Engineers: 45

Turnover Derived from TPM in UK:

Actual/Expected, 1985: £ 1.7 Million

Target (12 Months) 1986: £ 2.5 Million

Profit Before Tax: N/A

TYPE OF EQUIPMENT MAINTAINED:

Mainframes:

Minis: DEC , Hewlett-Packard

Business PCs: ACT Apricot, ACT Sirius, Compaq, DEC, Hewlett-Packard, IBM, Intertec  
Superbrain, Olivetti

Peripherals: VDUs, Printers, Monitors, Terminals

Other Equipment: Modems, Teletype, Terminals

Notes:





## APPENDIX B: EUROPEAN TPMs







## APPENDIX B: EUROPEAN TPMs

- This appendix provides the names and addresses of companies known to be currently active in TPM in the European markets covered in this report.
- The companies are presented in alphabetical order within country sections as follows:
  - The U.K.
  - France.
  - West Germany.
  - Italy.
  - The Netherlands.
  - Sweden.



**A. U.K. TPMs**

- ADVANCED COMPUTER MAINTENANCE LTD.  
Unit 5 & 6  
The Old School House  
Station Approach  
WOKING  
Surrey GU22 7UY  
08462 23831
- ADVANCED TECHNOLOGY MAINTENANCE LTD.  
21 Bristol Road  
Metropolitan Centre  
GREENFORD  
Middlesex  
UB6 8UP  
01 578 9222
- ANDERSON JACOBSON  
752 Deal Avenue  
SLOUGH  
Berks  
SL1 4SJ  
0753 82102
- APK DATA SERVICES  
Alma Cottage  
New Road  
Caunsall  
KIDDERMINSTER  
Worcestershire DY11 5YN  
0562 850985
- ATLANTIC COMPUTER (ENGINEERING LTD.)  
Atlantic House  
9 Red Lion Court  
LONDON  
EC4A 3EB  
01 583 9481
- BELL TECHNICAL SERVICES  
13 Mount Road  
Hanworth  
FELTHAM  
Middlesex  
TW13 6JG  
01 898 9631





- BOFFIN COMPUTER MAINTENANCE  
21 Heathfield  
Stacey Bushes  
MILTON KEYNES  
MK12 7HP  
0908 322688
- BUTEL TECHNOLOGY  
Butel House  
3 Great West Road  
Chiswick  
LONDON  
W4 5QJ  
01 995 1433
- CAE GROUP  
Akeman Street  
TRING  
Herts  
HP23 6AJ  
044282 4011
- COMMERCIAL DATA SYSTEMS LTD.  
Downham Road  
Ramsden Heath  
BILLERICAY  
Essex  
CM11 1PU  
0268 710292
- COMPACT 3000 LTD.  
The Limes  
High Holborn  
Sedgley  
DUDLEY  
West Midlands DY3 1SU  
09073 62331
- COMPEL PLC  
184 St. Albans Road West  
HATFIELD  
Herts  
AL10 0TE  
07072 73661



- COMPUTER ENGINEERING LTD.  
Unit 1  
Wessex Industrial Estate  
BOURNE END  
Bucks  
06285 27077
- COMPUTER FIELD MAINTENANCE LTD.  
Excell House  
Trust Industrial Estate  
HITCHIN  
Herts  
SG4 QUZ  
0462 51511
- COMPUTER INTERNATIONAL  
Unit 2  
Griffin Mall  
Griffin Lane  
AYLESBURY  
Bucks HP19 3BP  
0296 34911
- COMPUTER INVESTMENTS LTD.  
2 Plover Close  
Interchange Park  
Newport Pagnell  
MILTON KEYNES  
MK16 9PP  
0908 616222
- COMPUTER MAINTENANCE IRELAND LTD.  
Queens Road  
Queens Island  
BELFAST  
BT39 3DT  
0232 731531
- COMPUTER PERIPHERAL MAINTENANCE  
Alloy House  
5 Mercian Close  
CIRENCESTER  
Glos  
GL7 1LT  
0285 69806



- COMPUTER REPAIR CENTRE LTD.  
Thame Park Industrial Estate  
THAME  
Oxon  
OX9 3SJ  
084 21 6861
- COMPUTER SERVICE LTD.  
Bow Street  
Hanley  
STOKE ON TRENT  
Staffs  
ST1 2LA  
0782 286015
- COMPUTER SPECIAL SYSTEMS LTD.  
2nd Floor  
Barrasford House  
Goldsmith Street  
NOTTINGHAM  
NG1 5JY  
0602 415155
- COMPUTER TERMINAL SERVICES  
Bryant House  
Bryant Road  
STROOD  
Kent  
ME2 3EG  
0634 724333
- COMPUTERAID SERVICES  
21 Invincible Road  
FARNBOROUGH  
Hants  
GU14 7RB  
0252 548888
- COMPUTERCALL LTD.  
Garrett House  
24 Windmill Road  
BRENTFORD  
Middlesex  
TW8 OQA  
01 568 2086



- COMPUTERFIX LTD.  
5 Holdenhurst Road  
BOURNEMOUTH  
BH8 8EH  
0202 26538
- CYTECK (UK) LTD.  
Sandringham House  
9 Warwick Road  
MANCHESTER  
DM16 0QQ  
061 872 4682
- DATA DYNAMICS LTD.  
Clayton Road  
HAYES  
Middlesex  
UB3 1BD  
01 848 9781
- DATA LOGIC LTD.  
Queens House East  
Greenhill Way  
HARROW  
Middlesex  
HA1 1YR  
01 863 0383
- DATALECT COMPUTER SERVICES LTD.  
12 Aintree Road  
Perivale  
GREENFORD  
Middlesex  
UB6 7LG  
01 997 4404
- DATATYPE LTD.  
Llantarnam House  
Llantarnam Industrial Park  
CWMBRAN  
Gwent  
NP44 3YP  
06333 71177
- DDT MAINTENANCE LTD.  
58-64 Northfield Road  
Kings Norton  
BIRMINGHAM  
B30 1JH  
021 458 3205





- DICTAPHONE COMPANY  
Regent Square House  
The Parade  
LEAMINGTON SPA  
CV32 4NI  
0926 38311
- DIGITAL COMPUTER SERVICES LTD.  
29-30 King Street  
WIGAN  
Lancs  
WN1 1DY  
0942 41157
- DIGITAL SYSTEMS MAINTENANCE LTD.  
Baydel House  
Brook Way  
LEATHERHEAD  
Surrey  
KT22 7NA  
0372 378814
- DLE COMMUNICATION GROUP LTD.  
Rodd Estate  
Govett Avenue  
SHEPPERTON  
Middlesex  
TW17 8AG  
0932 231033
- DPCE (UK) LTD.  
Cumberland House  
Old Bracknell Lane  
Bracknell  
RG12 4AE  
0344-484 648
- EXTEL SYSTEMS SUPPORT  
Home Park Industrial Estate  
KINGS LANGLEY  
Herts  
WD4 8LZ  
09277 66144



- FACTORSAVE LTD.  
St. James House  
105-113 The Broadway  
West Ealing  
LONDON  
W13 9BL  
01 840 1199
- FRETWELL DOWNING COMPUTER GROUP  
736 Ecclesall Road  
SHEFFIELD  
S11 8TB  
0742 682301
- GEM COMPUTER FORMS EQUIPMENT LTD.  
Unit 7  
Clarence Street  
CHORLEY  
Lancs  
PR7 2BJ  
02572 71283
- HI-TECH SYSTEMS MAINTENANCE LTD.  
Unit 5  
Plantagenet Estate  
KINETON  
Warwicks  
CV5 0HW  
0926 641707
- INTERFACE NETWORK PLC  
17 Bilton Road  
Kingsland Industrial Estate  
BASINGSTOKE  
Hants  
RG24 0LJ  
0256 461191
- ISG DATA SALES LTD.  
5 Wellington Industrial Estate  
Spencers Wood  
READING  
RG7 1AW  
0734 882900
- JAECROW SYSTEMS SERVICES LTD.  
29-31 Lower Coombe Street  
CROYDON  
CR9 1LX  
01 680 9191



- KALAMAZOO MAINTENANCE SERVICES  
Mill Lane  
Northfield  
BIRMINGHAM  
B31 2RW  
021 475 2191
- KENT PROCESS CONROL-SITE SERVICES  
Frederick Street  
LUTON  
LU2 7QU  
0582 425861
- KODE SERVICES LTD.  
Station Road  
CALNE  
Wilts  
SN11 0JR  
0294 813771
- LAMBERT COMPUTER ENGINEERING  
Wessex Road  
BOURNE END  
Bucks  
06285 30501
- LMS COMPUTER MAINTENANCE LTD.  
Southampton House  
192-206 York Road  
Battersea  
LONDON  
SW11 3SA  
01 228 8860
- LOGICA UK LTD.  
64 Newman Street  
LONDON  
W1A 4SE  
01 637 9111
- LOGITEK LTD.  
Logitek House  
Bradley Lane  
Standish  
GREATER MANCHESTER  
WN6 0QZ  
0257 426644



- LOGSYS (COMPUTER MAINTENANCE) LTD.  
Logsys House  
Ashville Way  
WOKINGHAM  
Berks  
RG11 2PL  
0734 794121
- MAINDEC COMPUTER ENGINEERING LTD.  
Maindec House  
Abbey Barn Road  
HIGH WYCOMBE  
Bucks  
HP11 1QW  
0494 450250
- MAINSTAY COMPUTER COVER LTD.  
Unit 2  
Edgeley Road Industrial Estate  
STOCKPORT  
Cheshire  
SK3 0XR  
061 477 5825
- MBS ALVERONIC COMPUTERS LTD.  
2 Amsterdam Road  
Sutton Fields Industrial Estate  
HULL  
HU8 0XP  
0432 837400
- METYCLEAN LTD.  
Metyclean House  
38-48 Monkton Street  
LONDON  
SE11 4TP  
01 582 5555
- MICRO TECHNOLOGY  
51 The Pantiles  
TUNBRIDGE WELLS  
Kent  
TN2 5TE  
0892 45433





- MICROMAINTENANCE UK LTD.  
150-152 King Street  
Hammersmith  
LONDON  
W6 0QU  
01 741 0796
- MICROSERVE  
Little End Road  
Eaton Socon  
St. Neots  
HUNTINGDON  
CAMBS PE19 3JG  
0480 215005
- MIDAS COMPUTER SERVICES LTD.  
Premier House  
Shoreham Airport  
SHOREHAM  
West Sussex  
BN4 5FF  
0273 64686
- MILLS ASSOCIATES LTD.  
Wonastow Road  
MONMOUTH  
NP5 4YE  
0600 4611
- MODULAR BUSINESS COMPUTERS LTD.  
Unit 5a  
Hartspring Industrial Park  
Hartspring Lane  
WATFORD  
Herts WD2 8JD  
0923 50101
- NEXEL LTD.  
3 Jefferson Way  
THAME  
Oxon  
OX9 3SU  
0844 213151



- OPTIM MCS LTD.  
Optim House  
Blackhorse Road  
LETCWORTH  
Herts  
SG6 1HT  
04626 70661
- PENNY & GILES COMPUTER PERIPHERALS  
Somerford Road  
CHRISTCHURCH  
Dorset  
BH23 3PT  
0202 477461
- PETER WILLIAMS (BUSINESS MACHINE MAINTENANCE) LTD.  
821 Woolwich Road  
Woolwich  
LONDON  
SE7 8LS  
01 885 7104
- PRACTICA COMPUTERS  
200 London Road  
BURGESS HILL  
West Sussex  
RH15 9RD  
04446 47761
- PRECISION PERIPHERALS LTD.  
Unit 2  
Home Farm Industrial Estate  
Yattendon  
NEWBURY  
Berks RG16 0XT  
0635 201450
- Q-COM MAINTENANCE  
Monaco House  
Bristol Street  
BIRMINGHAM  
B5 7AS  
021 622 7165
- QUEST INTERNATIONAL COMPUTER SERVICES LTD.  
School Lane  
CHANDLER'S FORD  
Hants  
SO5 3YY  
04215 66321



- REALITY ELECTRONICS LTD.  
13 North Leith Sands  
EDINBURGH  
EH6 4ER  
031 554 0646
- SANDERSON COMPUTERS LTD.  
Station Road  
Halfway  
SHEFFIELD  
S19 5GZ  
0742 487768
- SE SERVICE  
14 Arkwright Road  
READING  
Berks  
RG2 0LS  
0734 875464
- SK COMPUTER SYSTEMS (MAINTENANCE) LTD.  
Unit F  
Pixmore Industrial Estate  
Pixmore Avenue  
LETCHWORTH  
Herts SG6 1JJ  
0462 679461
- SMS INTERNATIONAL  
Unitair Centre  
Great South West Road  
FELTHAM  
Middlesex  
TW14 8NT  
01 751 4451
- STAG TERMINALS LTD.  
30 Church Road  
TEDDINGTON  
Middlesex  
TW11 8PB  
01 977 3288



- SUN COMPUTER MAINTENANCE LTD.  
4 Crown Business Centre  
Horton Road  
WEST DRAYTON  
Middlesex  
UB7 8HZ  
01 890 1440
- SYMLOCK ELECTRONICS  
Gothic House  
Market Place  
PENKRIDGE  
Staffs  
ST19 5DJ  
078571 5155
- SYMTEC COMPUTER SERVICES LTD.  
Brook House  
Millbrook Road East  
SOUTHAMPTON  
Hants  
SO1 0HR  
0703 38868
- SYSCOM PLC  
Kelvin House  
The Broadway  
DUDLEY  
West Midlands  
DY1 4PY  
0384 236701
- SYSTEMS EFFICIENCY LTD.  
Foundry Close  
Foundry Lane  
HORSHAM  
West Sussex  
0403 69149
- SYSTIME COMPUTERS LTD.  
Millshaw Science Park  
LEEDS  
LS11 0LT  
0532 702277





- TECHNICAL COMPUTER SERVICES LTD.  
Peterson House  
Northbank  
Berryhill Industrial Estate  
DROITWICH  
Worcs WR9 9BL  
0905 775564
- TPM LTD.  
24 Longmoor Road  
LIPHOOK  
Hants  
GU30 7NY  
0428 723819
- UNIVERSAL COMPUTERS LTD.  
23 Paradise Street  
LONDON  
SE16 4QD  
01 232 1155
- VISTEC BUSINESS SYSTEMS LTD.  
Maintenance Division  
Duffield Road  
Little Eaton  
DERBY  
DE2 5EG  
0332 834040

**B. FRENCH TPMs**

- ANDERSON JACOBSON  
86 Avenue Lenine  
94250 GENTILLY  
FRANCE  
46 57 12 10
- CGEE ALSTHOM  
26 Rue Arago  
69100 VILLEURBANNE  
FRANCE  
78 53 02 86



- CONTROL DATA  
27 Cours des petites ecuries  
Lognes  
77315 MARNES LA VALLEE CEDEX  
FRANCE  
60 05 92 02
- DDC FRANCE  
15 rue Albertini  
0600 NICE  
FRANCE
- DECISION DATA FRANCE  
Tour Gallini 2  
36 Avenue Gallini  
93175 BAGNOLET CEDEX  
FRANCE
- DEPANNAGE TECHNIQUE INFORMATIQUE  
5 rue de la Parfumerie  
92600 ASUIERES  
FRANCE  
47 93 32 51
- DMA: DEPANNAGE MICRO INFORMATIQUE APPLIQUEE  
19 Avenue du General de Gaulle  
69300 CALUIRE  
FRANCE  
78 23 94 30
- DMS: DATA MAGNETIQUES SYSTEMS  
20 Rue de l'Arcade  
75008 PARIS  
FRANCE  
1 42 68 16 16
- ECM INFORMATIQUE  
26 Rue G Claude  
Z1 d'Aix  
13763 LES MILLES CEDEX  
FRANCE  
42 26 7122
- EUROTECHNICA  
16 Boulevard du General Leclerc  
92115 CLICHY  
FRANCE  
1 47 39 33 90



- INFOMAT GRAND SUD-QUEST  
11 Boulevard des Recollets  
31400 TOULOUSE  
FRANCE  
61 53 51 59
- INFORMAT  
52 Rue St. Lazare  
75009 PARIS  
FRANCE  
42 80 85 45
- INTERDATA  
5 bis ch de Gravier  
BP47  
91190 GIF SUR YVETTE  
FRANCE  
64 46 34 56
- INTERSYSTEM  
30 Rue Vaugelas  
7400 ANNECY  
FRANCE  
50 51 04 61
- LOGABAX  
3-5 Avenue Gallieni  
94250 GENTILLY  
FRANCE  
46 64 14 11
- MAINTENANCE INFORMATIQUE SERVICE  
13 Rue des Muriers  
75010 PARIS  
FRANCE  
1 46 36 40 77
- MAINTRONIC  
7 Rue des Sports  
69003 LYON  
FRANCE  
78 54 19 16
- MICROLOG  
5 Boulevard Ney  
75018 PARIS  
FRANCE  
1 42 01 54 15



- MICROMA  
34 Avenue President Wilson  
93212 LA PLAINE ST DENIS  
FRANCE  
48 09 22 13
- ORGANISATION TECHNIQUE POUR L'INFORMATIQUE  
FRANCO-EUROPÉENNE  
18 Berbier de Mete  
75013 PARIS  
FRANCE  
1 47 07 55 00
- SAMSON DATA  
Centre Act. Pernod  
70 Rue D Delcupe  
93100 MONTREUIL SOUS BOIS  
FRANCE  
42 87 19 20
- SEFEM INFORMATIQUE  
33 Rue Louis Saillant 2A Est  
69120 VAUX EN VELIN  
FRANCE  
78 80 05 82
- SEFTI MEMORIA  
70 Rue Leon Boyer  
37000 TOURS  
FRANCE  
47 37 68 71
- SEMIR  
Avenue de Quebec  
BT 453  
91946 LES ULIS CEDEX  
FRANCE
- SEMSI INFORMATIQUE  
26 Rue des Tissieres  
7400 CHAMONIX  
FRANCE  
50 53 40 05
- SERVICE INFORMATIQUE ASSISTANCE MAINTENANCE  
18 rue de l'Avenir  
93800 EPINAY SUR SEINE  
FRANCE  
48 22 92 52





- SG2  
12 Avenue Vion Whitcomb  
75016 PARIS  
FRANCE  
1 45 24 52 22
- SODETEG TAI  
283 Rue de la Minieue 21  
BP 11  
78530 BUC  
FRANCE  
39 56 80 60
- SPECTRAL  
22 Avenue des Nations  
BP 60007  
93480 VILLEPINTE  
FRANCE  
48 65 44 28
- TECHNIC BUREAU INFORMATIQUE  
42 Rue Chelmel  
BP 2033  
37020 TOURS CEDEX  
FRANCE  
47 20 25 78
- TELCI  
BP 157  
Ch de Crevecoeur  
93204 ST DENIS  
FRANCE  
48 29 63 35
- TELESYSTEMES  
Tour Amboise  
204 Rond Point du Pont de Tour Amboise  
92516 BOULOGNE  
FRANCE  
46 09 29 01



C. WEST GERMAN TPMs

- BITRONIC HARDWARE SERVICE GMBH  
Strahlenberger Weg 16  
6000 FRANKFURT  
069 618056
- CONTROL DATA  
Hahnstrasse 36  
6000 FRANKFURT 70  
069 63050
- DATAWAY  
Josefinestrasse 13  
40000 DUSSELDORF  
0211 139080
- EXTEC COMPUTER SYSTEMS  
Frankfurt Allee 1-3  
6136 ESCHBORN  
06196 70120
- INTERSCAN  
105 Kurfürstenstrasse  
6500 MAINZ  
06131 611094
- ISS INGENIEURBURO FÜR SYSTEMINTEGRATION UND  
SENDETECHNIK GMBH  
Mittelwendung 9  
2803 BREMEN-WEYNE  
04203 6088
- MANNESMANN-KIENZLE  
Postfach 1640  
7730 VILLINGEN SCHWARZWALD  
07721 671
- PERIPHERE COMPUTER SYSTEME  
Bordigstrasse 12  
D 4030 RATINGEN 1  
02102 47009
- SMS INTERNATIONAL  
Franken Allee 260  
6000 FRANKFURT AM MAIN I  
069 730 4515



**D. ITALIAN TPMs**

- COMPUTER LEASING INTERNATIONAL  
Via Famagosta 75  
Milan  
2-873-57-41
- ENCODEX HARDWARE SERVICE  
Via Padua 38  
20131 Milan  
2-2871612
- EUROTECH ITALIA SPA  
Via Andrea Costa, 31  
20131 Milan  
2-287-00-16
- IBI MAINT  
Via Assago  
Milan  
2-824-24-51

**E. DUTCH TPMs**

- BRINK BV  
Industrie Terreins  
STAPHORST  
5225 1999
- DCPE (NETHERLANDS) BV  
Zaagmolanaan 12  
3447 GS WAERDEN  
3480 10280
- DTC SERVICE  
24 Huis ter Heideweg  
PO Box 2  
3700 AA ZEIST  
3404 27222



- ESCON-ELECTRONIC SERVICE CONTRACTORS BV  
Wijnheven 80  
3011 ROTTERDAM  
010 33 3211
- GEVEKE ELECTRONICS SERVICE  
PO Box 652  
1000 AR AMSTERDAM  
020 5861 411
- THIJSSSEN FIELD SERVICE  
Hoofdweg 60  
Postbus 31  
7370 AA LOENEN (GLD)  
5765 1155

#### F. SWEDISH TPMs

- DATABOLIM AB  
Ålsnog 7-11  
Box 11064  
S-110 61 STOCKHOLM  
SWEDEN
- EMMA DATA SYSTEM  
Svardv 3  
S-182 33 DANDERYD  
SWEDEN  
08-753 30 75
- ERICSSON RADIO SYSTEMS  
163 SO STOCKHOLM  
SWEDEN  
08 757 9000
- OWELLAB  
Verkstadug 5  
Box 159  
S-351 04 VAXJO  
0470 103 10
- TELUB AB  
Ljungadalsg 2  
Box 1232  
S-351 12 VAXJO  
0470 420 00

